PROGRESS

OF

MEDICAL SCIENCE

MEDICINE

UNDER THE CHARGE OF

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Cultivation of the Organism of Epidemic Poliomyelitis.—S. Flexner and H. Noguchi (*Berlin. klin. Woch.*, 1913, l, 1693) give the details of their successful attempts to cultivate the microörganism of epidemic poliomyelitis. (Only some of the more important facts can be given here.) The method which finally succeeded is one developed by Noguchi in the cultivation of spirochetes. Human ascitic fluid containing a piece of fresh sterile rabbit's kidney was the medium which proved most satisfactory. The exclusion of oxygen is necessary. For this purpose a deep layer of sterile paraffin oil is sufficient. The primary culture seemed to take with greater certainty where an aërobic apparatus was employed. The tubes were kept at body temperature. Flexner and Noguchi found that all tubes that showed turbidity, precipitation, or gas formation within one or two days were contaminated. Even tubes which remain clear or show slight turbidity may be contaminated. To exclude contaminations they removed small quantities of material with sterile pipettes and stained in the usual method, and also made transfers to the ordinary media. Bacteria in the smears or any aërobic growth are contamiinations. Having excluded these, Flexner and Noguchi found that the growth of the poliomyelitis organism presented the following characteristics. After about five days in the incubator a faint opalescence is observed in the fluid about the piece of tissue. The controls remained clear or showed a finely granular precipitate about the tissue. In the following three to five days the opalescence in the inoculated tubes spread upward through the fluid while the precipitate in the controls collected more at the bottom of the tube. After ten to twelve days, the diffuse opalescence of the inoculated tubes began to clear

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and a sediment composed of small particles of irregular shape collected at the bottom of the tube. By the use of about 0.2 c.c. of the primary culture, successful transplants can be secured. The material for inoculation was obtained from patients suffering with the disease and from experimentally infected monkeys. Some of the latter material was preserved nine months in glycerin. An emulsion made from this material after passage through a Berkefeld filter gave a positive culture. All the pure cultures obtained from the various sources were examined and showed similar characteristics morphologically and with dyes. In the dark field preparation it is possible with practice to distinguish the organism. It is best stained by Giemsa's or Gram's stain. The organisms are round in pairs, in short chains, or irregular conglomerate masses. The individual organisms reach a size of about 0.2 micron in diameter. The limit of optical definition in a microscopic preparation is between 0.15 and 0.3 micron. It is quite possible that smaller organisms than those observed may exist. In solid media chains are missed. As the culture becomes old, degenerative changes may occur. The organism described above is found so constantly in the central nervous system of diseased men or monkeys that the presumptive evidence of its etiological relationship is strong. In attempting to reproduce poliomyelitis in monkeys cultures which were obtained from human sources as well as from monkeys were used. Inoculations were made directly into the brain or into the nervus ischiadicus and peritoneal cavity. As was to be expected the material obtained from man proved less infectious than that which had already been passed through monkeys. Positive results were obtained with each method of inoculation equally frequent. Cultures which were in their eighteenth or twentieth generation caused the disease to appear in monkeys. Tissues from these infected monkeys were proved to be infective. Furthermore, all the characteristic histological changes of the experimental infection were reproduced in the infected monkeys.

The Production of Acetone Bodies in the Living Animal.—F. FICHLER and H. KOSSOW (*Deut. Arch. f. klin. Med.*, 1913, cxi, 479) conclude from their experimental studies in part as follows: The liver is the organ where acetone and diacetic are formed in the body. It has already been shown that the perfused liver is capable of forming these substances. Furthermore, it is in the liver that B-oxybutyric acid is formed. It is probable that this acid is produced chiefly in the liver, though it is not certain that other organs or tissues are not also concerned in its formation. The fact that an animal whose liver function is partially destroyed produces less of these bodies than one in whom the liver function is normal supports the view expressed above. In so-called reversed Eck's fistula the liver produces excessive amounts of acetone bodies.

The Fatiguability of the Kidneys.—H. MOSENTAL and C. SCHLAYER (*Deut. Arch. f. klin. Med.*, 1913, cxi, 217) have made an experimental study of the fatiguability of the kidney with the following results: The diseased kidney may be exhausted in various ways. The state of renal function determines very largely which diuretic fatigues the kidney and which does not. The kind and frequency of use of the